

World-leading science enhanced to the benefit of the Australian wine industry

Capabilities of Australian researchers to deliver benefits to the Australian wine industry were boosted with the announced funding of \$2 million for the South Australian node of *Metabolomics Australia*, based at The Australian Wine Research Institute and utilized collaboratively within the Wine Innovation Cluster (WIC).

The Australian federal government has committed a total of \$9.5 million from the *National Collaborative Research Infrastructure Strategy* (NCRIS) to *Metabolomics Australia*. This funding will be shared between the nodes in Victoria, Queensland, South Australia and Western Australia. The South Australian State Government contributed a further \$0.8 million to the South Australian node bringing the total funding of this node to \$2 million.

How can this benefit the Australian wine industry and what is ‘metabolomics’?

Managing Director of The Australian Wine Research Institute (AWRI), Professor Sakkie Pretorius, explains, “As ‘proteomics’ is the study of an organism’s proteins and ‘genetics’ is the study of an organism’s genes, ‘metabolomics’ is the study of the total interactions and contributions of an organism’s metabolites. In the winemaking process, metabolites play a crucial role in delivering the complex flavours and aromas in wine fermented from less complex grape juice: wine is the combined product of the grape and yeast metabolomes. An understanding of how the metabolites work in this process, allows winemakers to more effectively produce wines to appeal to target markets. More effective market penetration contributes to the industry’s sustainability.”

Dr Paul Chambers, Principal Research Molecular Biologist, AWRI, and a member of the Bid team, commented on the wider community benefits of supporting this capability, “Apart from allowing the development of improved microbial strains and microbial-driven industrial processes, this funding will enable the building of a foundation of knowledge for the development of ‘Systems Biology’ in higher organisms such as human beings.” He explained, “There is currently a lack of metabolomic technology available to Australian scientists and industry, and microbial systems (especially yeast) are at the forefront of current systems level research. For example, we know that 60% of the common wine yeast’s genes have an identifiable homologue in humans, and human proteins expressed in yeast can be used to determine protein function which has direct relevance to research in human diseases such as Alzheimer’s and Parkinson’s.”

Dr Dan Johnson, Business Development Manager, AWRI, and also member of the Bid team explains further, “Both ‘metabolomics’ and ‘systems biology’ are internationally regarded as frontiers in biological research, and the Australian wine industry will now be a key beneficiary. Examples of major projects to be undertaken by the WIC partners using this metabolomics capability include the resolution of two major issues facing the Australian wine industry:

1. Determining the origin and physiological processes underpinning production of key flavour and aroma compounds in wine, and the development of methods to ensure that these flavours can be tailored in wines designed to meet specific consumer requirements; and
2. The screening, isolation and development of ‘low alcohol’ yeasts to enable the production of low alcohol wines.”

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